

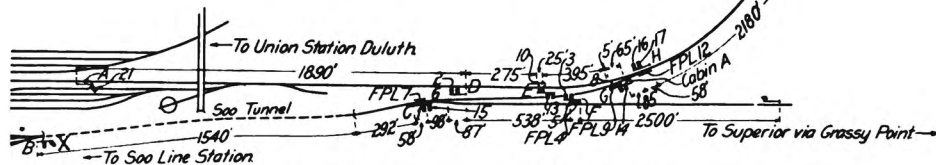
rails on the electric line in Portage avenue, which are located 60 ft. each side of the crossing, and are of the tongue switch type. The connections to these derails are made by 1-in. galvanized pipe, placed in 2-in. galvanized pipe with waterproof crank boxes filled with polar ice machine oil. An indicator is provided in the tower for the purpose of designating whether the track circuit is occupied. This indicator controls the necessary lock and signal circuits to prevent the incorrect manipulation of the machine, and the electric locks on the lever controlling the outer signals on the steam road are arranged for back locking purposes. This plant was installed by the Union Switch & Signal Company, under the personal supervision of J. H. Nieter, foreman.

### NEW RULING ON I. C. C. ACCIDENT REPORTS

It is expected that the accident reports required by the new I. C. C. rules, which went into effect July 1, will contain some figures which will tax the capacity of the statistician's adding machines; among others, figures showing the number of hours that employees of the railways have worked during the month. This requirement of a statement of "man hours" and of train and locomotive mileage is the most noticeable addition to the list of facts called for by the new rules; but the changes in form have imposed an immense amount of extra work on the railroad clerks who make them out. For instance, the principal blank, form T, provides for answers to questions covering every detail from the name of the reporting carrier (i. e., the road upon which the accident occurred) to the distance and direction from the nearest milepost at the time of the accident; the condition of the weather; whether at night or in the daytime, and ends with question 51, "Detail of, cause and nature of accident; circumstances, estimate and description of damage to property; responsibility and experience of employees responsible. When not manifestly immaterial, give number of cars in train (loaded, empty), percentage of air brakes operating, and gross weight in tons." The size of the whole blank is 8½ in. by 11 in.

Besides form T, there are three others, F, R and V. Form F is a monthly statement of fatalities which have developed from previously reported injuries. Form R is a supplementary report to accompany form T in the case of an accident due to a broken rail, calling under 39 heads for all of the available facts which may serve to explain the breakage of the rail.

Form V ("verification"), one to be sent in for each month, contains the oath of the officer sending the report and a comparative statement showing the total number of non-



Track and Signal Layout of the Great Northern Trestle at Duluth, Slightly Condensed.

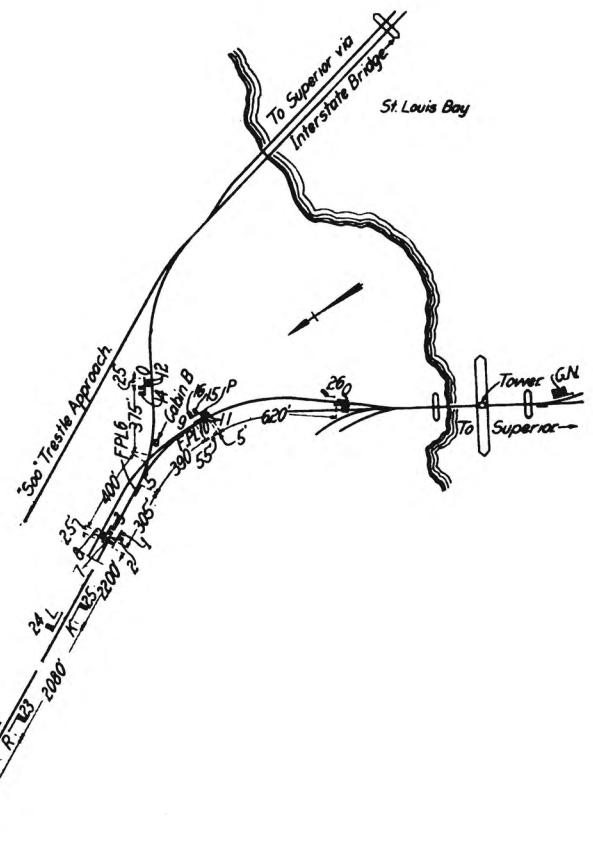
train accidents happening during the month and the number of casualties therefrom. For these accidents no form T is required, and the injured are divided into six classes, shopmen, stationmen, trackmen, bridge and building men, other employees, and all other persons. There are 11 classes of accidents or causes listed on form V.

At the bottom of each column containing a total number of killed or injured there is a space for a total number of "man-hours," that is, the aggregate number of hours worked during the month by all employees subject to industrial casualties in the classes named; and following this, a statement of the average number of casualties per million man-hours.

### DULUTH TERMINAL TRESTLE SIGNALING

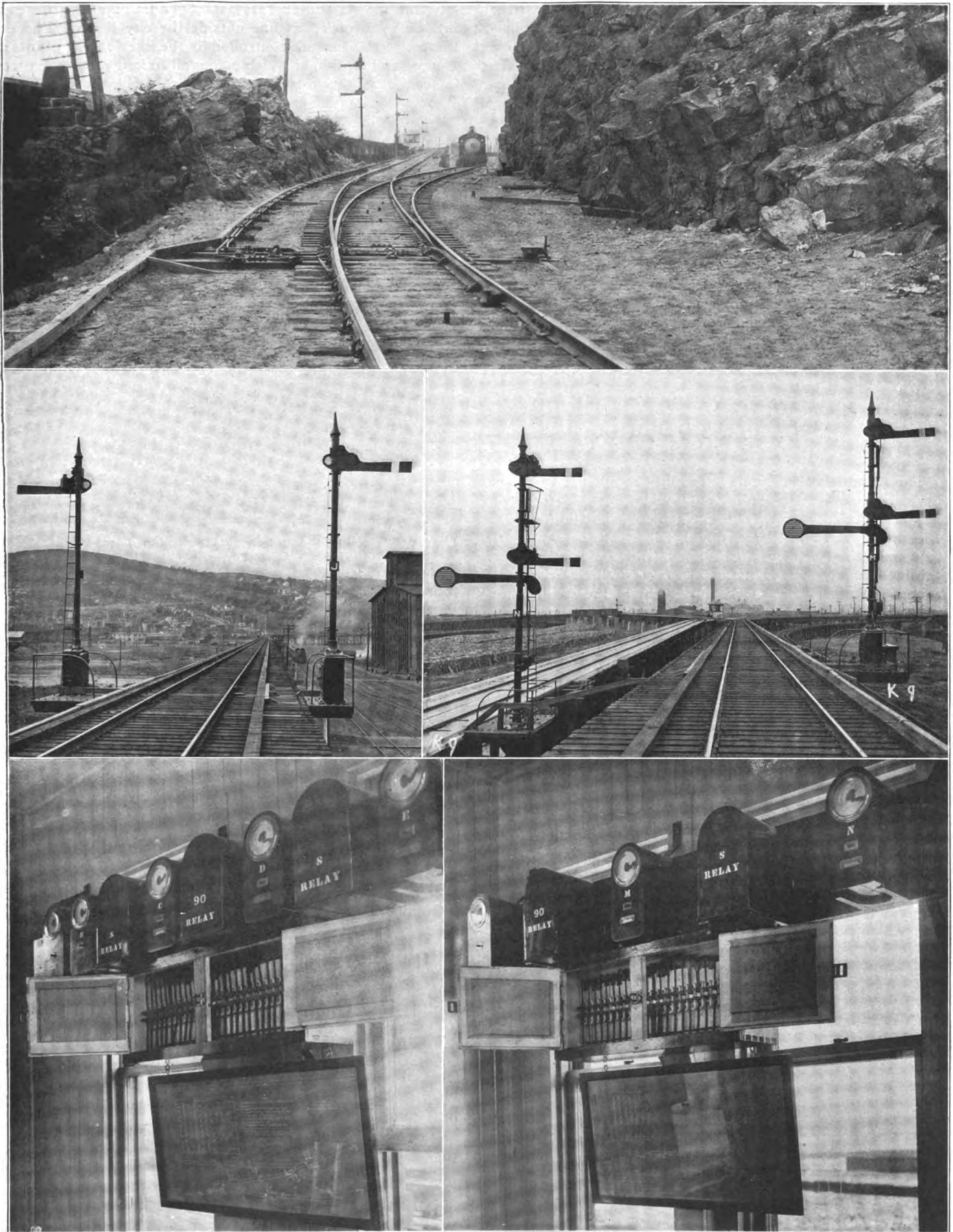
The Great Northern has recently completed the installation of two mechanical interlockings and certain automatic block signals on an elevated steel structure approximately two miles long, between Duluth, Minn., and Superior, Wis. This trestle was built some years ago and automatic signals were installed on it in 1905. The two new connections with the Minneapolis, St. Paul & Sault Ste. Marie, completed this year, one near each end of the trestle, necessitated the installation of an interlocking plant at each junction and in connection with this new work, the automatic signal layout was revised, so that the home signals for the two plants, in conjunction with the intermediate automatic signals, comprise an absolute permissive block system. The trestle carries a very busy single-track line, with about 90 train movements per day. These movements are controlled exclusively by the block signals.

The machines in the two plants, known respectively as North tower and South tower, are of the Saxby & Farmer design, with horizontal leadouts, having a 17-lever and a



16-lever frame, respectively. The North tower plant has 8 levers controlling 11 signals, 2 levers for 2 switches, 3 levers for 2 derails and 1 torpedo machine, and 4 levers for 4 facing point locks. The South tower machine has 6 levers for 8 signals, 2 levers for 2 switches, 2 levers for 2 facing point locks, 4 levers for 4 torpedo machines and 4 smashboards, and 2 spare spaces. The towers are of standard ground cabin design with supports attached to the steel trestle and extending also to the ground.

Each interlocking home signal is equipped with two arms and two lights, a smashboard, mechanical detector lock and torpedo machine, except in two cases in the North tower



Duluth Terminal Trestle Interlocking and Signaling, Showing, at the Top, Part of the Track and Signal Layout, Looking South from the Soo Line Tunnel; Below, at Left, a Pair of Intermediate Automatic Block Signals; and, at Right, the Home Signals at the South Tower, With Smashboards and Torpedo Machines; at the Bottom, Interior Views of North Tower at Left, and South Tower at Right.

plant, where Claussen derails are substituted for the torpedo machine. The mechanical detector lock is a Great Northern device, the use of which was described in *The Signal Engineer* for December, 1913. All switches are provided with facing point locks and detector bars. The Soo Line track, after leaving the trestle at the north end, passes through a tunnel 1,540 ft. long in reaching the station, train movements through this tunnel being protected by semi-automatic signals. Wall telephones are provided in both towers and also in a switch tender's cabin at the north end of the tunnel, and in the baggage room of the Soo Line station.

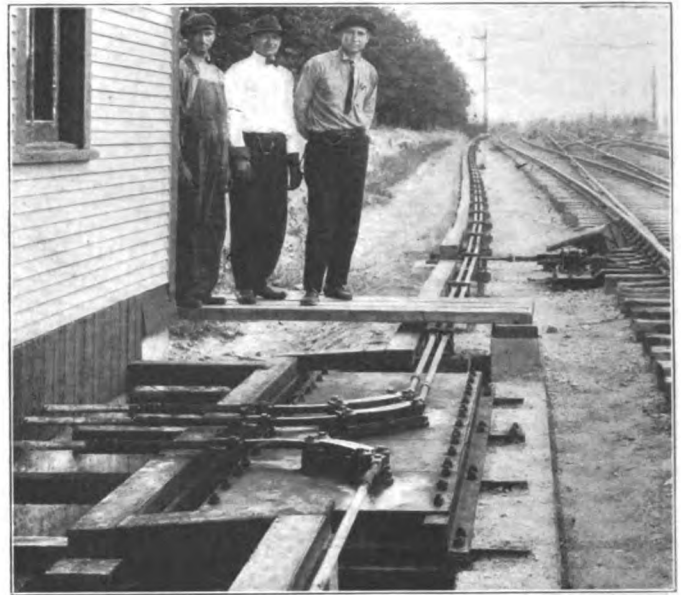
The electrical energy used in the installation is furnished principally by R. S. A. primary batteries, housed in the two towers. The control circuits are of Kerite wire with 4/64 in. walls, with one tape and one braid, the wires being laid in the Great Northern standard wooden trunking, clamped to the guard rail on the trestle deck with suitable metal clamps. The track circuits are continuous with approach and route locking control. The signal apparatus was supplied by the General Railway Signal Company, and the installation was made by the forces of the Great Northern.

### A. C. L. SIGNALING BETWEEN RICHMOND AND PLEASANT HILL

BY A. W. STEWART

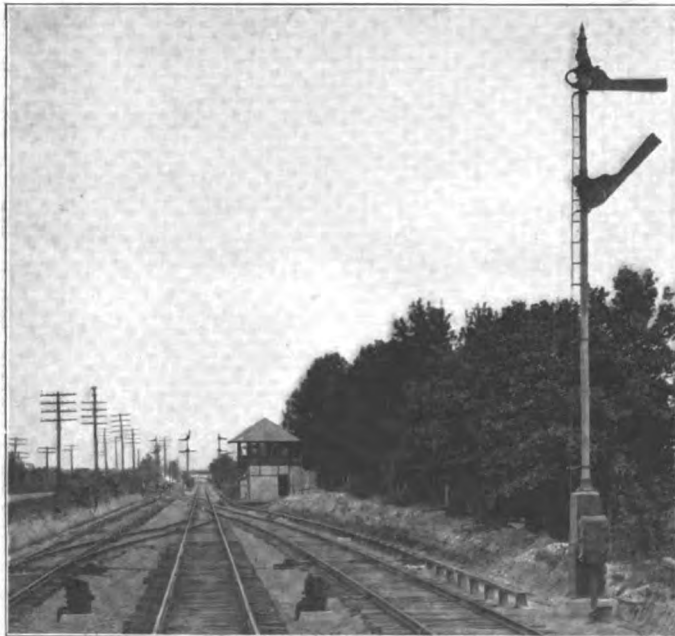
The Atlantic Coast Line has recently completed and placed in service an installation of 69¼ mi. of double track and 5¼ mi. of single track automatic block signaling between Richmond, Va., and Pleasant Hill, N. C. In the same territory there has been installed a new 31-lever electro-mechanical interlocking plant at the north end of Falling Creek yard, a new 18-lever electro-mechanical plant at the south end of Falling Creek yard, and a new 23-lever electro-mechanical plant at Collier; a 21-lever mechanical plant at Dunlop has been enlarged and remodeled to a 24-lever electro-mechanical plant, and electrical home and distant signals have been substituted for mechanical signals and electric approach indication and approach and route locking installed for A. C. L.

ger trains which stop at Petersburg stations pass through the city, the freight and express passenger trains using the easy grade single-track belt line outside the city limits. The entrances to this line are controlled by the interlocking plants at Dunlop and Collier, at which points all freight cars loaded for, or from Petersburg, are left and picked up by regular freight

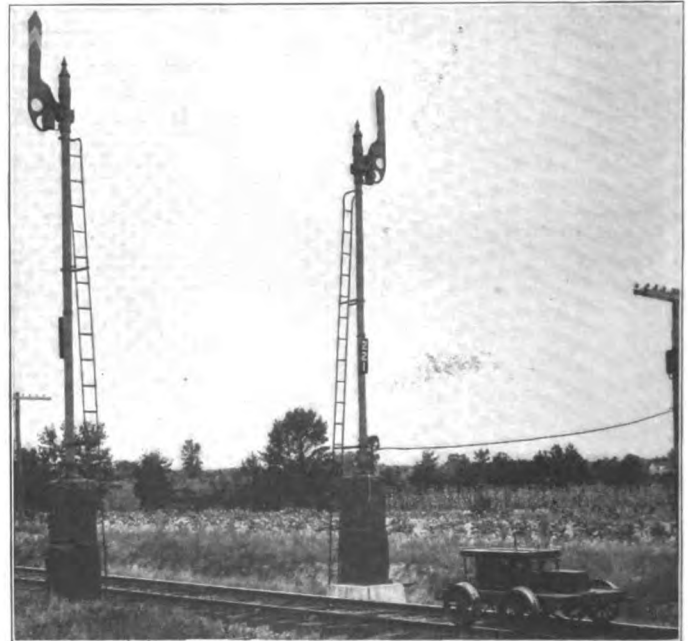


Leadout Foundation and Leadout Deflecting Bars at the Collier Tower.

trains. The lever in the tower at Dunlop, which controls southbound signals governing movements to the Belt Line, and the lever in the tower at Collier, which controls signals governing northbound movements to this line, are called direction levers and neither can be reversed without the cooperation of the towermen at both towers, and then only provided the Belt Line is clear throughout its entire length.



General View of the Collier Plant.



Typical Double Automatic Signal Location on Single-Track.

tracks in the plants at the Virginian Railway crossing at Jar-ratt, and the Southern Railway crossing at Emporia.

The most interesting part of this work is the protection of the 5¼ mi. of single track, known as the Petersburg Belt Line. On account of heavy grades, bad curves, numerous street crossings, etc., no freight trains and only those passen-

When it is desired to pass one or more trains south, for instance, the operator at Dunlop asks by a bell code for the operator at Collier to unlock his direction lever. If the northbound direction lever at Collier is normal, the signals in the stop position and all Belt Line track relays picked up, the operator at Collier can unlock the direction lever at Dun-